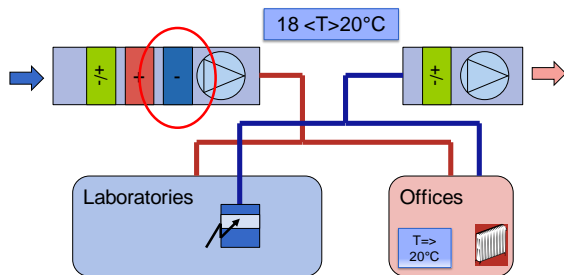


VIRTUAL MODELING ENERGY DEMAND IN RELATION TO LOCATIONS

Egnaton's Energy Working Group, using their 'Basic Model' - a virtual laboratory building, has simulated the influence of geographical location on the energy used in European laboratories.

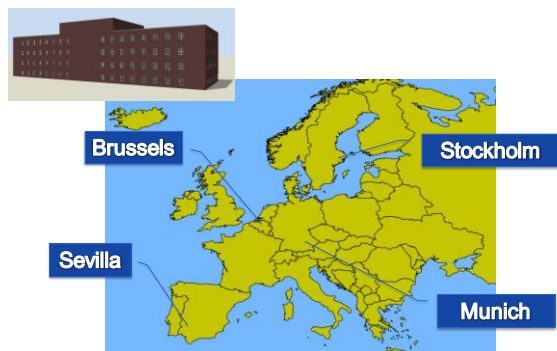
BASIC MODEL - HVAC SYSTEM 2

These simulations are based on the HVAC System 2 model developed in Egnaton Note 2/11 describing HVAC Systems and thermal comfort. The supply air temperature is controlled between the 18 and the 20°C.

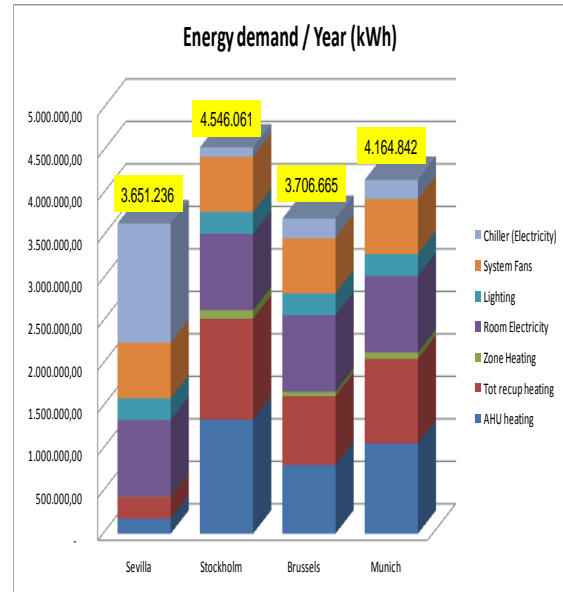


GEOGRAPHIC LOCATIONS

This exercise has developed for simulations for four different climatic locations in Europe: Munich, Brussels, Stockholm and Seville.



The following chart shows the energy demand of the virtual building based in these cities.



CONCLUSIONS OF THE SIMULATION

As expected, locations like Seville require significantly more cooling than in locations such as Stockholm. On the other hand more heating is needed in the Northern Europe than in Southern Europe.

The findings suggest that the energy profile for the Central European cities such as Munich and Brussels have an energy profile that is closer to the profile of Stockholm than that of Seville.

As well, Brussels has a better energy profile than Munich due to the influence of the North Sea which moderates the extremes of outside temperatures for both heating and cooling.

These results also illustrate the importance of heat recovery systems for the central and northern parts of Europe and the importance of cooling recovery systems in the southern part of Europe.